

**Health Facility Engineering Section**  
**Division of Health Facilities & Services - Bureau of Health Systems**  
**Michigan Department of Community Health**

**Protection of Essential Patient/Resident Care Functions During Construction Projects**

The impact of demolition, renovation, or construction activities to the host facility must be minimized so that essential services are maintained throughout the project. Accordingly the following aspects must be considered:

- Maintaining a required level of life (fire) safety
- Keep important mechanical/electrical systems operational
- Phasing of the work to support ongoing facility function
- Protection of patient/resident care related facilities from contamination
- Sustaining the general safety of patients, residents, staff, and the public

Management of these multiple protective measures can be integrated to maximize effectiveness and efficiencies and should be incorporated into the project requirements for all parties to follow.

**Interim Life Safety:**

The Michigan Department of Labor and Economic Growth Bureau of Fire Services, is the lead regulatory agency in determining the requirements related to life safety during construction. Typically equivalent measures such as alternate means of egress, additional fire extinguishers, fire watches, and floor to deck rated smoke tight barriers are required.

**Mechanical/Electrical Systems:**

Few compromises of mechanical or electrical systems can be tolerated if the affected care functions are to be maintained. Scheduling for off-hours work or providing temporary replacement equipment offer possible solutions. A written protocol for notification and definition of the extent for partial or full interruptions should be in place and agreed to by all stakeholders prior to demolition/renovation work.

**Project Phasing:**

Many healthcare renovations require phasing to maintain required services. Some compromise or reduction of capacity or function may be tolerable, but the essential elements of care must be supported throughout the work. The acceptable level of capacity or function must be clearly communicated and agreed to by all involved parties during the planning stage of the project.

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## **Infection Control Risk Assessment:**

An infection control risk assessment (ICRA) is a determination made during the planning phase of the project of the potential risk of transmission of various air and waterborne biological contaminants in the facility, identification of patients who are severely immunocompromised, and guidance to mitigate cross transmission of disease based on the associated epidemiology during demolition, renovation, construction, and after project completion.

### **Aspects of Construction:**

- Define the scope and extent of construction activities
- Determine the susceptibility of potentially affected patients/residents to infection throughout the building
- Develop the needed measures to protect care functions from construction related contamination and disease transmission

These measures typically involve erection of smoke-tight, floor to deck barriers and exhaust fans to maintain a net air flow from care areas into areas of demolition, renovation, and/or construction. However the extent of these measures must be appropriate for the level of activities versus the degree of patient/resident susceptibility. Therefore the necessary precautions could dictate more or less stringent measures.

### **Infection control risk mitigation protocols:**

- Train hospital staff, visitors, and construction personnel
- Put protective measures into place and maintain throughout the work
- Provide for inspection of the initial installation and provide continuous monitoring of the effectiveness of the infection control measures during the entire course of the project. This monitoring may be conducted by in-house infection control and safety staff or by independent outside consultants.

### **Elements involved with the final building design:**

- Specify locations for handwashing facilities
- Determine the number, location, and type of airborne infection isolation and protective environment rooms needed
- Evaluate the need for routine and mass patient decontamination
- Consider locations of hazardous, infectious, or noxious atmospheric discharges in relationship to outside air intakes, doors, or operable windows
- Water system should be designed to limit Legionella and waterborne opportunistic pathogens
- Selection of appropriately cleanable finishes and surfaces, particularly in critical environments

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**General Safety Issues:**

- Define travel paths and staging locations for materials and personnel associated with construction
- Maintain safe public and staff access to the building
- Possibly limit the hours of construction activity
- Contingencies in cases of extreme weather conditions
- Control of excessive noise and vibration
- Put into place written procedures for emergency suspension of work and protective measures indicating the responsibilities and limitations of each party (owner, designer, constructor, and monitor).
- Develop emergency procedures in case of potential utility outages or demolition/construction based emergencies from causes such as discovery of unknown utilities, roof leaks, welding, excavation, or material drops
- Consider possible impact to other floors or remote areas